

American Newsletter

of some 12,000 feet was thrown out of the top of the cloud, quite out of control and severely damaged, at over 25,000 feet.

These storm investigations, carried out in Florida in 1946 and in Ohio during 1947, were made by a very large and complete network of observation points, covering some 100 square miles. Ground observations, radar, free radar-tracked balloons, and aircraft were all used. In one storm season alone some 1,400 balloons were released and over 1,000 penetrations made by P-51s. Here again it was found that the severity of conditions varied greatly. The maximum up-draught conditions reported were approximately 70 feet per second with down-draughts of 20 f.p.s. Such storms went up as high as 60,000 feet, although it was generally believed that the worst conditions of turbulence likely to be encountered occurred at the freezing level, and that the actual thunderheads themselves were less severe.

Those responsible for this work believe also that thunderstorms may consist of separate "cells," several cells forming one bad storm, which then possibly recreates itself by

giving birth to further cells as the storm develops. The cycle seems to be that an up-draught forms to begin with, which starts the "cell" and the thunder cloud. Later on, and at one side of the storm (generally the back), a down draught comes into being, so that quite violently opposing air currents are in close proximity inside the cloud. As the original storm loses its initial intensity the up-draught becomes weaker and weaker, until only the down-draught remains as a measurable factor (although other freshly created cells, or complete storms, may be going strong). Pressure and rainfall plots were also made of some 100 storms, and on the whole little basic difference was noted between those of Florida (where there is much surrounding water) and the ones over the large land areas of Ohio.

Measurements of the electric field intensity inside the clouds also yielded interesting results. One field, just prior to a lightning strike at 12,900 feet, was measured as 3,400 volts/c.m., and the average maximum field for nine different thunderclouds was 1,300 volts/c.m. Here again the large fields seemed to occur only inside the cloud at approximately the freezing level—while the fields inside a stable non-precipitating cloud were often less than 10 volts/c.m.

For Continental Routes

Latest Version of the French SO "Bellatrix"



AN attractive French transport monoplane which approximates to, and has a rather higher performance than, the Viking, is the SO.30R-2 Bellatrix, now being produced by the Société Nationale de Constructions Aéronautiques du Sud-Ouest for Air France.

The Bellatrix has undergone an extensive period of development, and although the SO.30N—which served as a prototype for the later SO.30R—was completed in 1942, various difficulties have prevented the Bellatrix from reaching the production lines until recently. The SO.30N, designed to accommodate 23 passengers and 2,640 lb of freight, was an all-metal mid-wing monoplane with a pressurized fuselage and twin fins and rudders. The prototype was completed in 1942, but the Italo-German armistice commission refused to allow test flying in order to prevent any repetition of similar escapes to that which occurred during the first test flight of the SO.90 postal monoplane. (It may be remembered that the pilot of the SO.90 eluded the Germans by flying the aircraft to freedom in North Africa.) Not until after the liberation was extensive test flying possible.

Development continued during the occupation and a 30-passenger version with an increased gross weight was produced and designated SO.30R-1. The major external difference between SO.30N and SO.30R was that the latter aircraft had a single fin and rudder. In this form the SO.30R underwent a series of tests and proving flights and actually entered production before it was found that improved take-off characteristics, needed to meet current I.C.A.O. requirements, could be attained by reverting to the twin fins and rudders used on the original SO.30N. The tailplane modification delayed production seriously, but a small number of SO.30R-2s (the designation by which the aircraft with the new tail unit is known) has now been completed.

The Bellatrix has a cantilever mid-wing; the centre-section carries the engine nacelles, main undercarriage members, and flaps, and the outer sections embody integral fuel tanks, flaps and ailerons. Each section is of box-spar construction with a removable leading edge. The fuselage is a monocoque of circular cross-section, with rubber-jointed airtight riveting between formers, stringers and skin. The pressurized section

A recent view of the latest SO.30R-2 Bellatrix, showing the new tail unit and the unusually clean lines of the machine.

of the fuselage contains the crew's compartment, passenger cabins, a bay with bar and toilet, and luggage compartments under the cabin floor. The rear section houses a freight or luggage compartment.

Compared with contemporary British and American aircraft, the control compartment appears somewhat cramped, and the unbroken lines of the fuselage nose, which includes the pilots' transparent panels, provide a somewhat limited field of view.

The present production version of the Bellatrix is powered by two Gnome-Rhône 14R.33 radial engines, developing 1,730 h.p. each for take-off and a rated power at sea level of 1,290 h.p. each driving three-bladed c.s. airscrews, although reports indicate that a later version may use Pratt and Whitney Double-Wasps.

Accommodation is provided for a maximum of 30 passengers distributed in three compartments, containing 9, 6 and 15 seats respectively—two seats to port and one to starboard in each row. An alternative layout provides sixteen berths for night routes. Bar, dressing room and toilet are to the rear of the passenger compartments. Freight or luggage holds have a combined capacity of 4,300 lb; three of these are under the floor, with additional holds in the centre section of the wing and in the rear of the fuselage.

Performance data follow: Maximum speed at 19,700 feet, 342 m.p.h.; cruising speed at 19,700 feet, 255 m.p.h.; ceiling, 29,200ft; range with 30 passengers and 4,300 lb of freight, 620 miles; range with 30 passengers and 2,100 lb freight, 1,240 miles; range with 16 sleeping berths, 2,110 miles.

SINGAPORE BRANCH OF S.L.A.E.

A branch of the Society of Licensed Aircraft Engineers has been set up in Singapore under the chairmanship of Mr. A. F. W. Andren, who is chief technical officer of the Department of Civil Aviation. The Hon. Secretary is Mr. Charles Short, c/o Q.E.A., P.O. Box 846, Singapore.